Claims

1. A process for preparing an ethylamine by reacting ethanol with ammonia, a primary amine or a secondary amine in the presence of hydrogen and a heterogeneous catalyst, wherein a biochemically prepared ethanol (bioethanol) in which the concentration of sulfur and/or sulfur-containing compounds has been reduced beforehand by bringing it into contact with an adsorbent is used.

2. The process according to the preceding claim for preparing monoethylamine, diethylamine and/or triethylamine by reacting ethanol with ammonia.

3. The process according to either of the two preceding claims, wherein an ethanol prepared by fermentation is used.

4. The process according to any of the preceding claims, wherein ethanol in which the concentration of C_{2-10}-dialkyl sulfides, C_{2-10}-dialkyl sulfoxides, 3-methylthio-1-propanol and/or S-containing amino acids has been reduced beforehand by bringing it into contact with an adsorbent is used.

5. The process according to any of the preceding claims, wherein ethanol in which the concentration of dimethyl sulfide has been reduced beforehand by bringing it into contact with an adsorbent is used.

6. The process according to any of the preceding claims, wherein the adsorbent is a silica gel, an aluminum oxide, a zeolite, an activated carbon or a carbon molecular sieve.

7. The process according to the preceding claim, wherein the zeolite is a zeolite from the group consisting of natural zeolites, faujasite, X-zeolite, Y-zeolite, A-zeolite, L-zeolite, ZSM 5-zeolite, ZSM 8-zeolite, ZSM 11-zeolite, ZSM 12-zeolite, mordenite, beta-zeolite, pentasil zeolite, metal organic frameworks (MOF) and mixtures thereof which contain ion-exchangeable cations.

8. The process according to either of the two preceding claims, wherein the zeolite has a molar SiO_2/Al_2O_3 ratio in the range from 2 to 100.

9. The process according to any of the three preceding claims, wherein cations of the zeolite have been completely or partly replaced by metal cations.

10. The process according to any of the preceding claims, wherein the adsorbent comprises one or more transition metals, in elemental or cationic form, from groups VIII and/or IB of the Periodic Table.

11. The process according to the preceding claim, wherein the adsorbent comprises silver and/or copper.

12. The process according to any of the three preceding claims, wherein the adsorbent comprises from 0.1 to 75% by weight of the metal or metals.

13. The process according to any of the preceding claims, wherein the prior contacting of the ethanol with the adsorbent has been carried out at a temperature in the range from 10 to 200°C.

14. The process according to any of the preceding claims, wherein the prior contacting of the ethanol with the adsorbent has been carried out at an absolute pressure in the range from 1 to 200 bar.

15. The process according to any of the preceding claims, wherein the concentration of sulfur and/or sulfur-containing compound has been reduced by ≥ 90% by weight (calculated as S) by the prior contacting of the ethanol with the adsorbent.

16. The process according to any of claims 1 to 14, wherein the concentration of sulfur and/or sulfur-containing compound has been reduced by ≥ 95% by weight (calculated as S) by the prior contacting of the ethanol with the adsorbent.

17. The process according to any of claims 1 to 14, wherein the concentration of sulfur and/or sulfur-containing compound has been reduced by ≥ 98% by weight (calculated as S) by the prior contacting of the ethanol with the adsorbent.

18. The process according to any of the preceding claims, wherein the concentration of sulfur and/or sulfur-containing compound has been reduced to < 2 ppm by weight (calculated as S) by the prior contacting of the ethanol with the adsorbent.

19. The process according to any of claims 1 to 17, wherein the concentration of sulfur and/or sulfur-containing compound has been reduced to < 1 ppm by weight (calculated as S) by the prior contacting of the ethanol with the adsorbent.

20. The process according to any of claims 1 to 17, wherein the concentration of sulfur and/or sulfur-containing compound has been reduced to < 0.1 ppm by weight (calculated as S) by the prior contacting of the ethanol with the adsorbent.

21. The process according to any of the preceding claims, wherein the prior contacting of the ethanol with the adsorbent has been carried out in the absence of hydrogen.

22. The process according to any of the preceding claims, wherein the ethanol used has previously been brought into contact with the adsorbent in the liquid phase.

23. The process according to any of the preceding claims, wherein the reaction of the ethanol with ammonia, a primary amine or a secondary amine is carried out at a temperature in the range from 80 to 300°C.

24. The process according to any of the preceding claims, wherein the reaction of the ethanol with ammonia, a primary amine or a secondary amine is carried out in the liquid phase at pressures in the range from 5 to 30 MPa or in the gas phase at pressures in the range from 0.1 to 40 MPa.

25. The process according to any of the preceding claims, wherein the heterogeneous catalyst used for the reaction of the ethanol with ammonia, a primary amine or a secondary amine is a hydrogenation/dehydrogenation catalyst comprising a metal of group VIII and/or IB of the Periodic Table.